

Appl. No. 09/975,682
Arndt dated December 14, 2005
Reply to Office Action of September 20, 2005

Remarks

The present amendment accompanies an RCE and responds to the final Official Action dated September 20, 2005. The Official Action objected to claims 1-18 and 23 as informal. It rejected claims 1-3, 6, 8-13 and 23 under 35 U.S.C. 103(a) based on Ginis et al. U.S. Patent Publication No. 2003/08544 (Ginis) in view of Schneider et al. U.S. Patent No. 6,314,135 (Schneider). Claims 4 and 5 were rejected under 35 U.S.C. 103(a) over Ginis in view of Schneider further in view of Timm et al. U.S. Patent No. 6,055,268 (Timm). Claims 14-17 were rejected under 35 U.S.C. 103(a) over Ginis in view of Timm and further in view of Smee et al. U.S. Patent No. 6,400,761 (Smee). Claims 7 and 18 were objected to as being dependent upon a rejected base claim, but were indicated to be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. These grounds of rejection are addressed below.

Claim 10 has been canceled without prejudice. Claims 19-22 were previously canceled.

Claims 1, 5, 6, 8, 9, 11, 14, 16-18, and 23 have been amended to be more clear and distinct. Claims 1-9, 10-18 and 23 are presently pending.

Claim Objections

Claims 1-18 and 23 were objected to as informal. To address this objection, the claims have now been amended to be more clear and distinct as discussed further below. Should the Examiner persist in this objection, he is requested to call the undersigned to schedule a telephone interview to discuss this objection further.

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The claim objection suggests "pre-coding matrix" should be changed to "precoder".

While the Examiner is thanked for his careful reading of the specification and the claims, the claims are meant to refer to a "pre-coding matrix", and the claim language as presently amended is both clear and consistent with the specification.

As discussed at page 4, lines 1-13, for example, Fig. 1 shows a block diagram of an exemplary system including the invention. Each transmitter has a respective pre-coder. At page 7, line 15-page 9, line 1, details of a pre-coding matrix $P(f)$ are provided with equation 3 showing an NxN matrix and equation 6 showing a 2x2 matrix for a system with two users.

Fig. 4 shows an exemplary system 400 for four encoding, transmitting and receiving entities. Page 11, line 9-page 15, line 9. If we focus on channel A, we see that channel A has a four by one pre-encoder matrix where P_{11} is 1 and therefore the signal from encoder E_1 is shown directly connected to summer S_1 . The other elements of the pre-encoder matrix for Channel A are $P_{12}(f)$ which receives the encoded signal from encoder E_2 , $P_{13}(f)$ which receives the encoded signal from encoder E_3 , and $P_{14}(f)$ which receives the encoded signal from encoder E_4 . The outputs from all four pre-encoders are fed to summer S_1 . As a matrix, these four elements can be represented as:

$$\text{Channel A Pre-encode Matrix} = \begin{bmatrix} 1 \\ P_{12}(f) \\ P_{13}(f) \\ P_{14}(f) \end{bmatrix}$$

It will be recognized that the above 4x1 matrix is the first column of equation 3 of the specification with N=4.

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As presently amended, claims 1, 14 and 23 call for processing "encoded data signals from the plurality of transmitters utilizing at least one pre-coding matrix" (claim 1), "processing I and q signals from each communications channel utilizing a respective pre-coding matrix" (claim 14), and "means for processing encoded data signals from the plurality of transmitters utilizing at least one pre-coding matrix". Said matrix is then adapted as further claimed by these claims.

The Art Rejections

All of the art rejections hinge on the application of either Ginis, standing alone or in combination with one or more additional items. As addressed in greater detail below, Ginis and the other relied upon items do not support the Official Action's reading of them and the rejections based thereupon should be reconsidered and withdrawn. Further, the Applicant does not acquiesce in the analysis of the relied upon art made by the Official Action and respectfully traverses the Official Action's analysis underlying its rejections.

In light of the present amendment, the Examiner is requested to reconsider Applicant's previous Remarks at pages 16-20 responded to at pages 8 and 9 of the final Official Action. While Ginis describes a variety of approaches to dealing with cross-talk, it appears to work in a different way than is presently claimed. A first Ginis implementation addresses an adaptive power control method described at ¶¶ 0072-0110. That approach does not appear to be relied upon by the Examiner, and correctly so. The final Official Action focuses on Fig. 14 of Ginis which is part of a vectored transmission system described by Ginis ¶¶ 0111-0189. Fig. 14 shows pre-coders 1 to L each dedicated to processing tones 1 to L, respectively. Par. 55 of Ginis says "Fig. 14 shows a vectored DMT system." As noted above, Ginis' discussion of vectored

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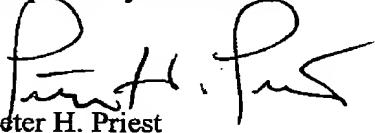
transmission begins at par. 0111 and his specific discussion of Fig. 14 is found in par. 0114.

This vectored approach neither meets the claims as presently amended, nor does it make them obvious.

Conclusion

All of the presently pending claims, as amended, appearing to define over the applied references, withdrawal of the previous rejection and prompt allowance are requested.

Respectfully submitted,


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